

Remarks

The undersigned's Remarks are preceded by related comments of the Examiner, presented in small bold-faced type.

Claim Rejections – 35 USC § 102

2. **Claim 30 is rejected under 35 U.S.C. 102(e) as being anticipated by Hamilton et al., U.S. Patent No. 6,559,860.**

3. **As per claim 30, Hamilton et al discloses a computer system for processing data representing construction of a three-dimensional object (fig 15), the system comprising: a model data storage system (fig 1, #18) comprising stored model data representing construction of a three-dimensional object from a plurality of modeled components (fig 15); a computer processor coupled to the model data storage system (fig 1, #16), a program storage system (fig 1, #18), and output display system (fig 1, #38), the program storage system comprising instructions to configure the processor to: retrieve the stored model data from the model data storage system; render a first view of the model in which the plurality of modeled components are in a first positional arrangement (fig 15); render a second view of the model in which the plurality of modeled components are in a second positional arrangement that is different from the first positional arrangement (fig 15); and display an overlaid view of the first and the second model views on the output display system, the overlaid view distinguishing a change between the first and the second positional arrangements of the modeled components (fig 15).**

The Examiner, in his comments, states that Hamilton discloses a computer-implemented method that includes a “program storage system comprising instructions to configure the processor to: retrieve the stored model data from the model data storage system; render a first view of the model in which the plurality of modeled components are in a first positional arrangement (fig 15); render a second view of the model in which the plurality of modeled components are in a second positional arrangement that is different from the first positional arrangement (fig 15); and display an overlaid view of the first and the second model views on the output display system, the overlaid view distinguishing a change between the first and the second positional arrangements of the modeled components (fig 15).” The undersigned respectfully disagrees.

While the undersigned recognizes that Fig. 15 of Hamilton does show a component in two positions (i.e., Fig. 15 shows an arm in a horizontal position and at a downward slanting position 204), the undersigned submits that this figure, standing alone, does not teach or suggest the claimed invention because: (i) it is not clear if this multi-position display of the arm is actually a capability of the Hamilton system and, (ii) even if such a multi-position display is

provided by the Hamilton system, this, in and of itself, is not new, nor is it, standing alone, what is claimed.

Regarding point (i):

What Fig. 15 of Hamilton shows is that an arm may assume two positions. However, based on the undersigned's reading of Hamilton, the two arm positions shown in Fig. 15 may be a mere illustration aid provided by the patent draftsman to facilitate understanding of the patent. For example, Fig. 15 may simply be a drawing provided by the patent draftsman to show that Hamilton's display may be updated to show the arm in one position at a first point in time and at a second position at a second point in time. The undersigned could not find anything to teach or suggest that the two positions would, in fact, be simultaneously displayed to a user at the same time. With this in mind, if the two positions are merely part of the patent illustration provided by the patent draftsman, and are not capabilities of the Hamilton system, then it is respectfully submitted that this mere draftsman's illustration is not sufficient to teach or suggest a computer-implemented method that includes the rendering and display features recited by claim 30.

For at least the foregoing reason, the undersigned respectfully submits that the Examiner's has not met his burden of showing that Hamilton does, in fact, recite all of the elements of claim 30 and, accordingly, the Examiner's rejection of claim 30 in light of Hamilton is not supported under 35 U.S.C. § 102.

If the Examiner has a different interpretation, or can point to disclosure in Hamilton teaching that the multiple positions are, in fact, displayed simultaneously by the Hamilton system in the manner recited by claim 30, the undersigned would welcome the clarification.

Regarding point (ii):

In addition, the undersigned would like to draw the Examiner's attention to page 3 line 23 through page 4 line 16 of the present application wherein it is disclosed that there are several prior art "manual" methods that can be used to depict a component in two positions. The undersigned has reviewed Hamilton and finds that, even if the multiple positions of the arm in Hamilton's Fig. 15 are, in fact, displayed by the Hamilton system, there is nothing to suggest that this is achieved through anything other than the prior art "manual" methods disclosed in the background of the present application.

Claim 30 recites something different from the prior art "manual" methods disclosed in the background of the present invention. What Claim 30 requires is that the multiple views be provided by rendering different views based on a three dimensional object and then providing an overlaid view on an output display system to distinguish a change between a first and a second

positional arrangement. Accordingly, unless it can be shown that (i) Hamilton's Fig. 15 two-position view is computer generated and (ii) it is generated by means other than the "manual" methodologies discussed in the background of the present application, rejection of claim 30 in light of Hamilton is not proper. The undersigned respectfully submits that the Examiner has not yet made such a showing.

For the foregoing reasons, the undersigned respectfully submits that the Examiner's rejection of claim 30 in light of Hamilton is not supported, and it is respectfully requested that the Examiner withdraw his rejection of claim 30.

Claim Rejections – 35 USC § 103

2. **Claims 1, 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamilton et al., U.S. Patent No. 6,59,860 in view of Stone.**

3. As per claim 1, Hamilton et al discloses a computer-implemented method of processing a three-dimensional model of an object (fig. 15), the model comprising a plurality of model components (fig. 15, #172 and #204), and the method comprising: based on identifying the different positional arrangements, automatically generating an image of the model depicting a change in a position of a first one of the model components with respect to a second one of the model components (fig 15). However, Hamilton et al does not specifically disclose constructing a data structure identifying different positional arrangements of the model components to represent different positions of movable ones of the model components. This is disclosed in Stone et al in column 2 lines 33-50. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a data structure with the system of Hamilton et al because this provides an orderly way to keep track of the relative positioning of objects with respect to each other which would make it easier for user when deciding to make positional changes.

The Examiner's rejection of claims 1, 23-29 as unpatentable over Hamilton in view of Stone is respectfully traversed.

The Examiner, in his comments, states that Hamilton discloses a computer-implemented method that includes "automatically generating an image of the model depicting a change in a position of a first one of the model components with respect to a second one of the model components (fig 15)." The undersigned respectfully disagrees.

As further discussed with respect to claim 30: (i) it is not clear if this multi-position display of the arm is actually a capability of the Hamilton system and, (ii) even if such a multi-position display is provided by the Hamilton system, this, in and of itself, is not new, nor is it, standing alone, what is claimed.

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Regarding point (i):

As further discussed with respect to claim 30, it is not clear whether the two arm positions shown in Fig. 15 of Hamilton are a mere illustration aid provided by the patent draftsman to facilitate understanding of the patent, or whether they are, in fact, generated by the method recited in the referenced application claims. As discussed with respect to claim 30, if the two positions are merely part of the patent illustration provided by the patent draftsman, and are not capabilities of the Hamilton system, then it is respectfully submitted that this mere draftsman's illustration is not sufficient to teach or suggest a computer-implemented method that includes the rendering and display features recited by the referenced claims. Accordingly, and for substantially the same reasons set forth with respect to claim 30, the undersigned respectfully submits that the Examiner's rejection of the referenced application claims in light of Hamilton is not supported.

Regarding point (ii):

As further discussed with respect to claim 30, the present application discloses that there are several prior art "manual" methods that can be used to depict a component in two positions and the undersigned has found nothing to suggest that the multiple positions of Hamilton's Fig. 15 arm are generated through anything other than these prior art "manual" methods. In contrast, what claim 1 requires is that the multiple views be provided by "automatically generating an image of the model depicting a change in a position of a first one of the model components with respect to a second one of the model" and that this automatic generating be "based on a data structure identifying different positional arrangements." For substantially the same reasons discussed with respect to claim 30, it is respectfully submitted that Hamilton does not disclose the "automatically generating" element recited in claim 1.

Furthermore, the undersigned believes this "automatically generating" element is not found in Stone, and, contrary to the Examiner's statement in his comments, the undersigned respectfully submits that Stone does not teach a data structure identifying different positional arrangements of the model components to represent different positions of movable ones of the model components that can be combined with Hamilton to achieve the invention recited by claim 1. In particular, the Examiner believes that Hamilton and Stone are of such a different character that there is no teaching or suggestion that they should be combined. If the Examiner believes otherwise, it is respectfully requested that the Examiner point out some objective basis for concluding that one would be motivated to combine Hamilton and Stone in the manner recited by the claims of the present application.

For these additional and independent reasons, the undersigned respectfully submits that the Examiner's rejection of claim 1 in light of Hamilton and Stone is not supported.

For at least the foregoing reasons, the undersigned requests that the Examiner withdraw the rejection of claims 1 and 23-29 in light of Hamilton and Stone.

4. As per claim 23, Hamilton et al discloses displaying the first model view and the second model view simultaneously in a common view area to represent a three-dimensional model in differing positions (fig 15). However, Hamilton et al does not disclose accessing a model data structure to render a first model view and a second model view, the model data structure comprising an interrelationship of a plurality of model components. This is disclosed in Stone et al in column 1 lines 30-42 and column 2 lines 32-50. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a model data structure with the system of Hamilton et al because this provides an orderly way to keep track of the relative positioning of objects with respect to each other which would make it easier for user when deciding to make positional changes.

For reasons similar to those discussed with respect to claim 1, the undersigned respectfully submits that Hamilton and Stone, alone or together, do not teach or suggest a computer-implemented method that includes accessing a model data structure to render a first model view and a second model view, the model data structure comprising an interrelationship of a plurality of model components; and displaying the first model view and the second model view simultaneously in a common view area to represent a three-dimensional model in differing positions. Accordingly, claim 23 is believed to be patentable over Hamilton and Stone and the undersigned respectfully request that the Examiner withdraw the rejection and allow the claim.

5. As per claim 24, ..

* * *

10. As per claim 29, ...

Claims 24-29 depend, directly or indirectly, from claim 23. Accordingly, the undersigned submits that these claims are patentable for at least the reasons stated with respect to claim 23.

11. Claims 2-4, 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamilton et al. in view of Stone et al. as applied to claim 1 above, and further in view of Silva et al., U.S. Patent No. 6,473,081.

Claims 2-4 and 7-9 depend from claim 1. As discussed with respect to claim 1, neither Hamilton nor Stone, alone or together, teach or suggest all of the elements of claim 1. In addition, the missing elements of claim 1 are not taught or suggested by Silva. Accordingly, the undersigned submits that claims 2-4 and 7-9 are patentable over Hamilton, Stone, and Silva for at least the reasons set forth with respect to claim 1.

18. Claims 10, 12-14, 19, 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silva et al in view of Hamilton et al.

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19. As per claims 10 and 37, Silva et al discloses a computer-implemented method of processing data representing a three-dimensional object model (column 1 lines 30-35), the method comprising: traversing a model hierarchy to render a first view of a model (column 3 lines 59-67 and column 4 lines 1-10), the model hierarchy comprising an interrelationship of a plurality of model components (column 3 lines 59-67 and column 4 lines 1-10), the model components having a first positional arrangement with respect to each other, and the first view depicting the first positional arrangement of the model components (column 3 lines 59-67 and column 4 lines 110); traversing a positionally altered version of the model hierarchy to render a second view of the modeled object (column 3 lines 59-67 and column 4 lines 1-10), the positionally altered version comprising the plurality of model components in a second positional arrangement with respect to each other (column 3 lines 59-67 and column 4 lines 1-10), the second positional arrangement differing from the first positional arrangement, and the second view depicting the second positional arrangement of the model components (column 3 lines 59-67 and column 4 lines 1-10). However, Silva et al does not disclose combining the first view and the second view to display a composite image of the model, the composite image simultaneously representing both the first and the second positional arrangements. This is disclosed in Hamilton et al in fig 15. It would have been obvious to one of ordinary skill in the art at the time the invention was made to display the combined images because it allows the user to see how the moved parts affect the other parts.

For reasons substantially identical to those discussed with respect to claim 1, the undersigned respectfully submits that, contrary to the Examiner's suggestion, Hamilton does not disclose a computer-implemented method that includes combining a first view and a second view to display a composite image of the model, the composite image simultaneously representing both the first and the second positional arrangements (and, as further explained below, this "simultaneous display" feature is also not found in Silva). For at least this reason, claims 10 and 37 are patentable over a combination of Hamilton and Silva.

Furthermore, the undersigned understands Silva as teaching the use of nodes representing properties of a rendered image such that values stored in these nodes may be altered so as to change the image being displayed. However, as understood by the undersigned, Silva's "nodes" work together to provide for a single arrangement of a rendered image at a time. That is, there is no teaching or suggestion in Silva to configure these nodes such that two images may be obtained and a composite of those two images is automatically generated and the two images simultaneously displayed. The undersigned understands Silva as teaching that node values may be edited to change a first image into a second image but, in the process of doing so, the date structure used to create the first image is changed such that the first image can no longer be generated. Because of the loss of this ability to generate the first image, the undersigned submits that Silva cannot be relied on as teaching or suggesting a method in which two images must be generated from a data structure such that simultaneous display of the two images can be provided. For at least this additional reason, the undersigned submits that claims 10 and 37 are patentable over Hamilton and Silva, and it is respectfully requested that the Examiner withdraw his rejection of claims 10 and 37.

20. As per claims 12 and 38, ...
21. As per claim 13, ...
22. As per claim 14, ...
23. As per claim 19, ...

Claims 12-14 and 19 depend, directly or indirectly, from claim 10, and claim 38 depends from claim 37. The undersigned respectfully submits that these claims are patentable for at least the reasons stated with respect to the related independent claim (i.e., 10 or 37) and respectfully requests that the Examiner withdraw his rejection of these claims.

24. **Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silva et al in view of Hamilton et al in further in view of Stone et al.**

25. **As per claim 15, Silva and Hamilton do not disclose wherein display attributes comprise line style attributes selected from a group consisting of color, line weight, and a line pattern. This is disclosed in Stone in column 2 lines 32-50. It would have been obvious to one of ordinary skill in the art at the time the invention was made have different attributes because this would make it easier for the user to visually see the difference between the original position and the new one.**

Claim 15 depends (indirectly) from claim 10. As discussed with respect to claim 10, neither Hamilton nor Silva, alone or together, teach or suggest all of the elements of claim 10. In addition, the missing elements of claim 10 are not taught or suggested by Stone. Accordingly, the undersigned submits that claim 15 is patentable over Hamilton, Stone, and Silva for at least the reasons set forth with respect to claim 10.

26. **Claims 31-33, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamilton in view of Silva et al.**

Claims 31-33 and 36 depend, directly or indirectly, from claim 30. As discussed with respect to claim 30, the elements of claim 30 are not disclosed by Hamilton. Silva also fails to disclose those elements not found in Hamilton (i.e., neither Hamilton nor Silva, along or together, teach or suggest the method recited by the elements of claim 30). Thus, it is respectfully submitted that claim 30 is patentable over a combination of Hamilton and Silva, and, accordingly, dependent claims 31-33 and 36 are likewise patentable.

Allowable Subject Matter

31. **Claims 5-6, 11, 16-18, 20-22, 34-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

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The undersigned would like to thank the Examiner for his indication of allowable subject matter. Following the Examiner's further consideration of the rejected claims, the Applicants will consider whether to redraft the allowable claims in independent form to obtain allowance.

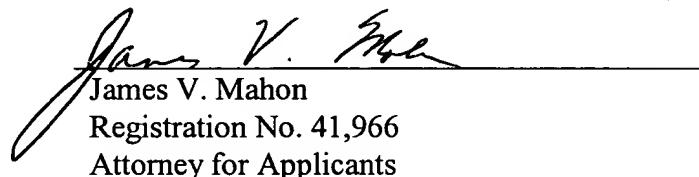
Conclusions

Claims 1-38 are now pending and believed to be in condition for allowance. Applicants respectfully request that all pending claims be allowed.

Please apply any credits or excess charges to our deposit account number 50-0521.

Respectfully submitted,

Date: April 9, 2004



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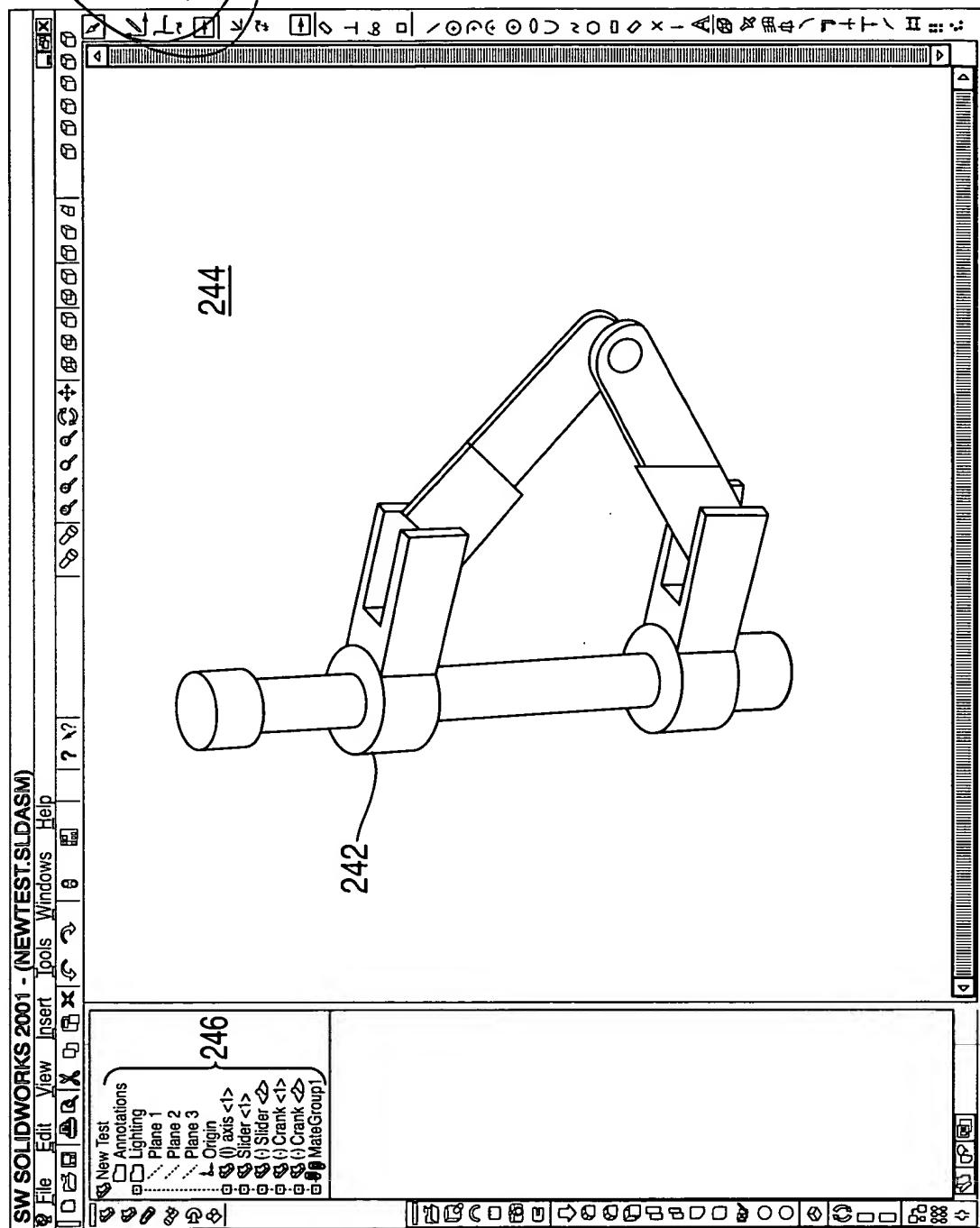
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Annotated Sheet Showing Changes

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Annotated Sheet Showing Changes

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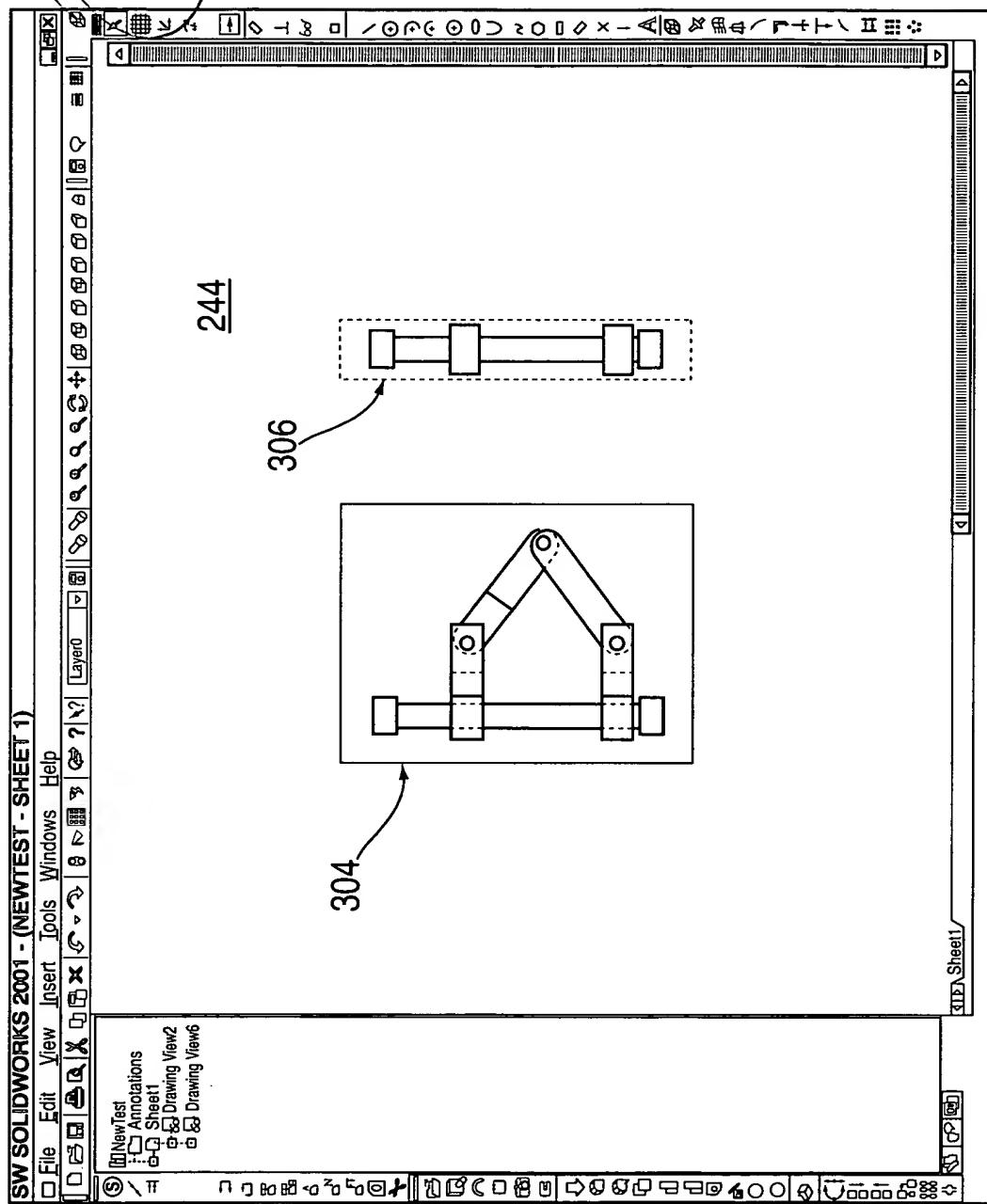


FIG. 3



USN 09/924,294
Annotated Sheet Showing Changes 4/15

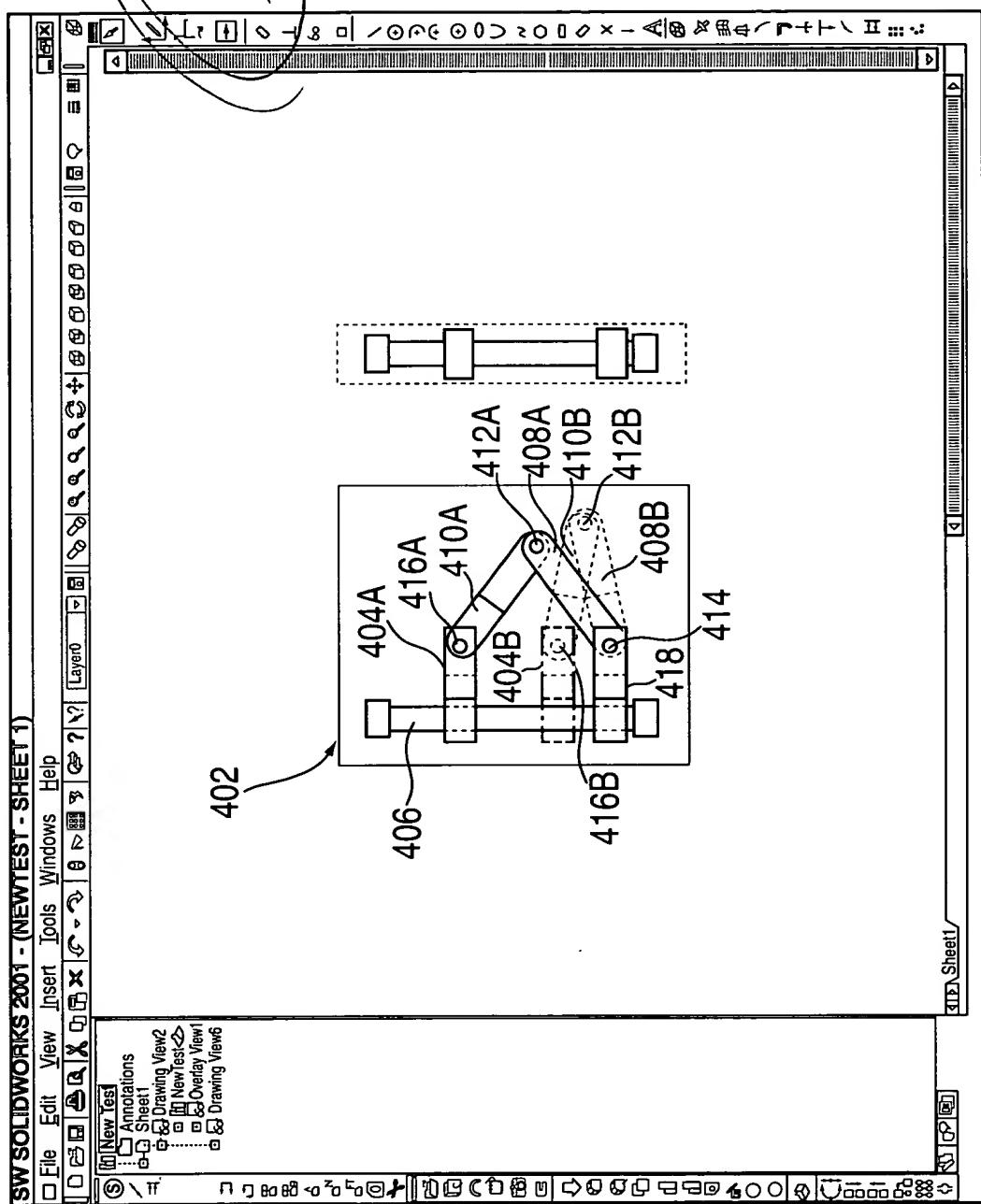


FIG. 4

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Annotated Sheet Showing Chg 7/15

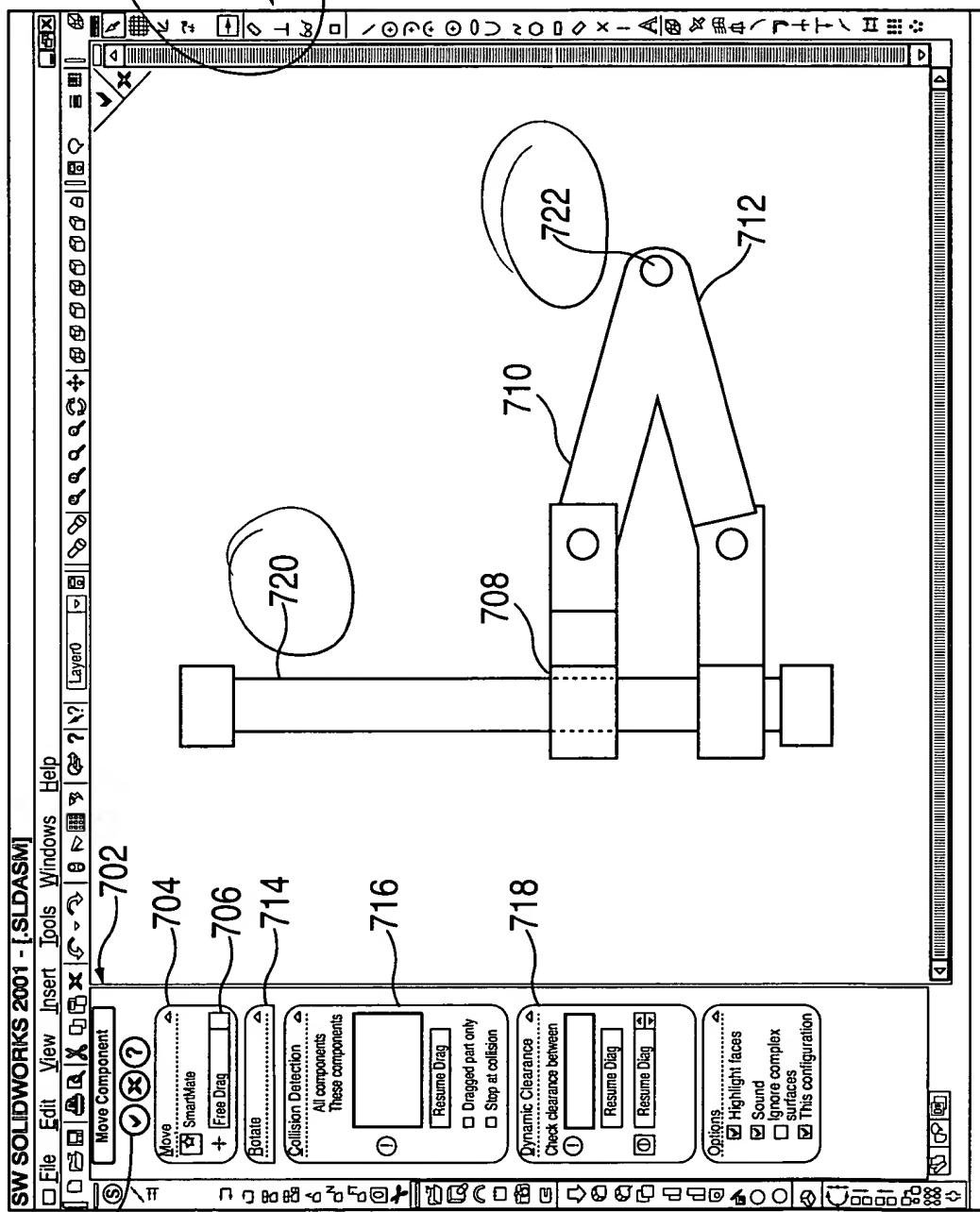


FIG. 7

USSN 09/924, 294

Annotated Sheet Showing Change 10/15

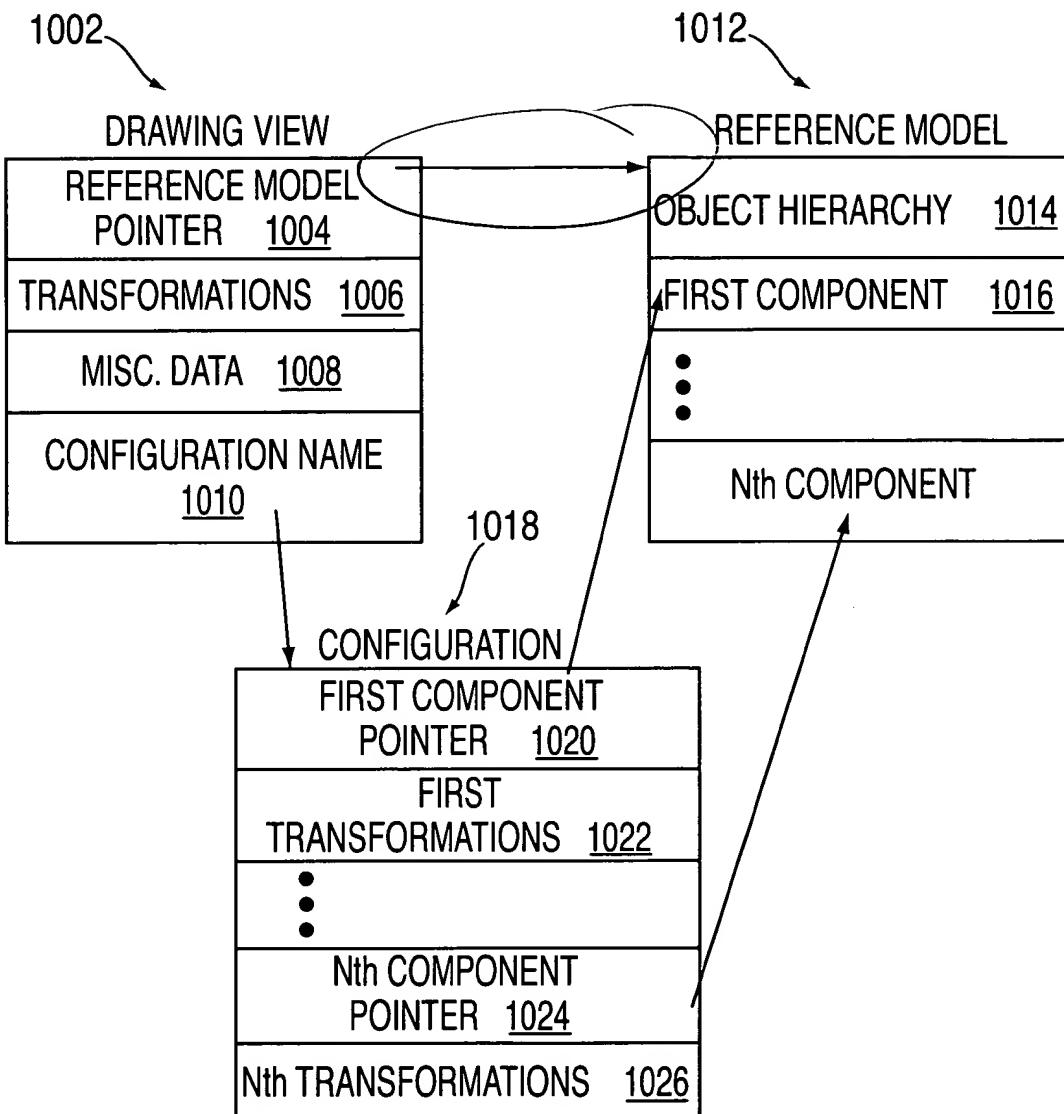


FIG. 10

USSN 09/924, 294

Annotated Sheet Showing Change 12/15

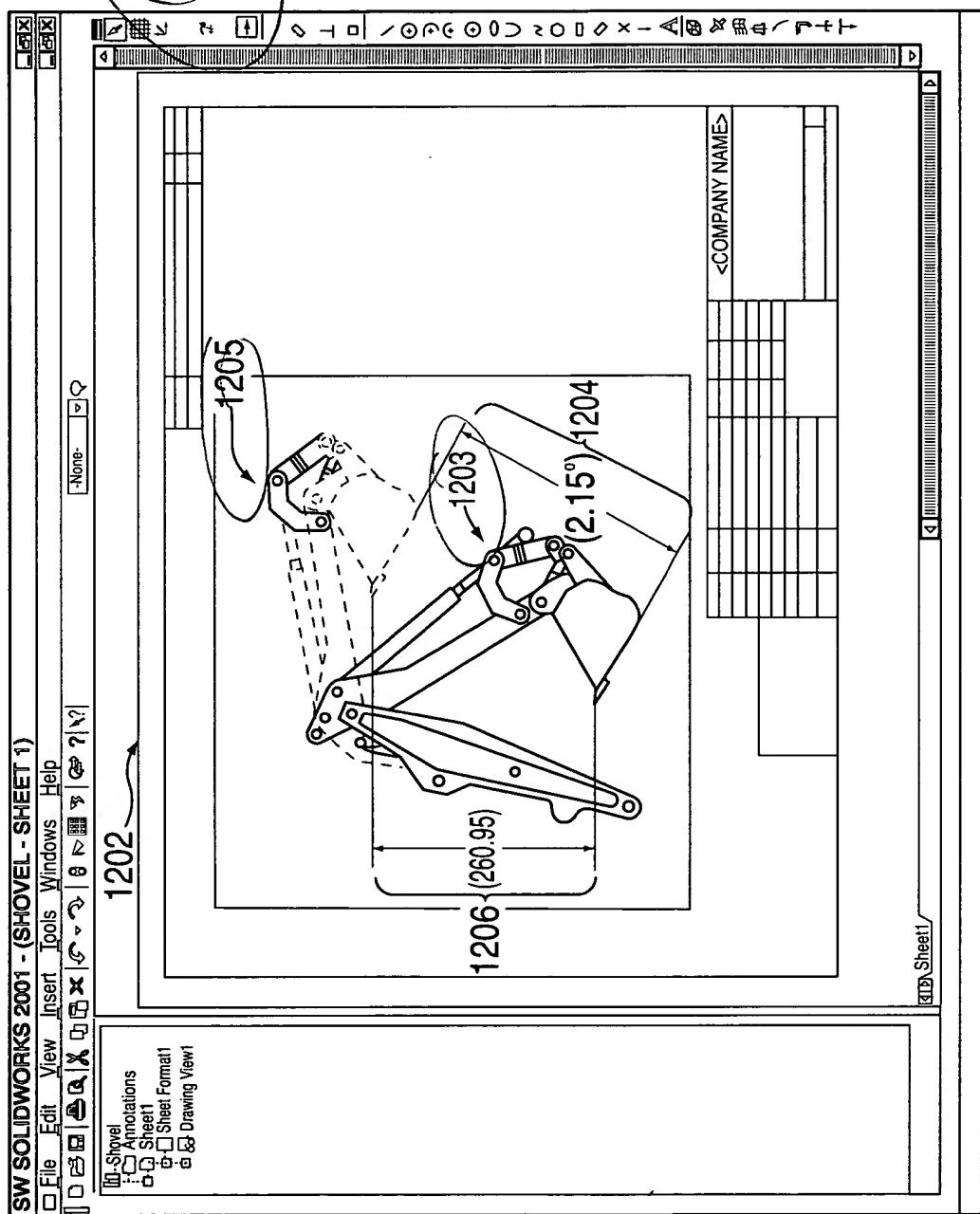


FIG. 12

USSN 09/924,294
Annotated Sheet Showing Change 13/15

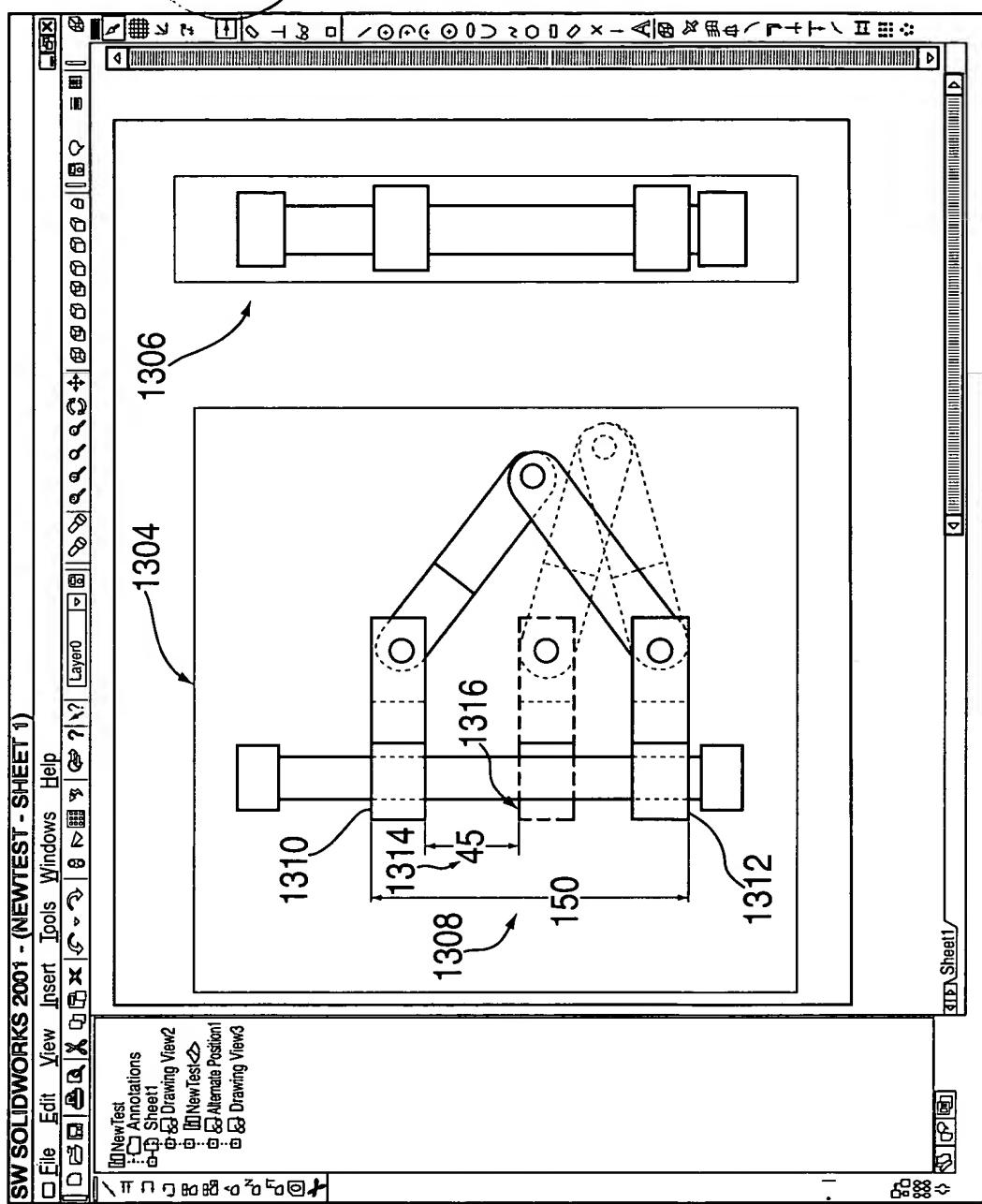


FIG. 13



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Annotated Sheet Showing Changes 14/15

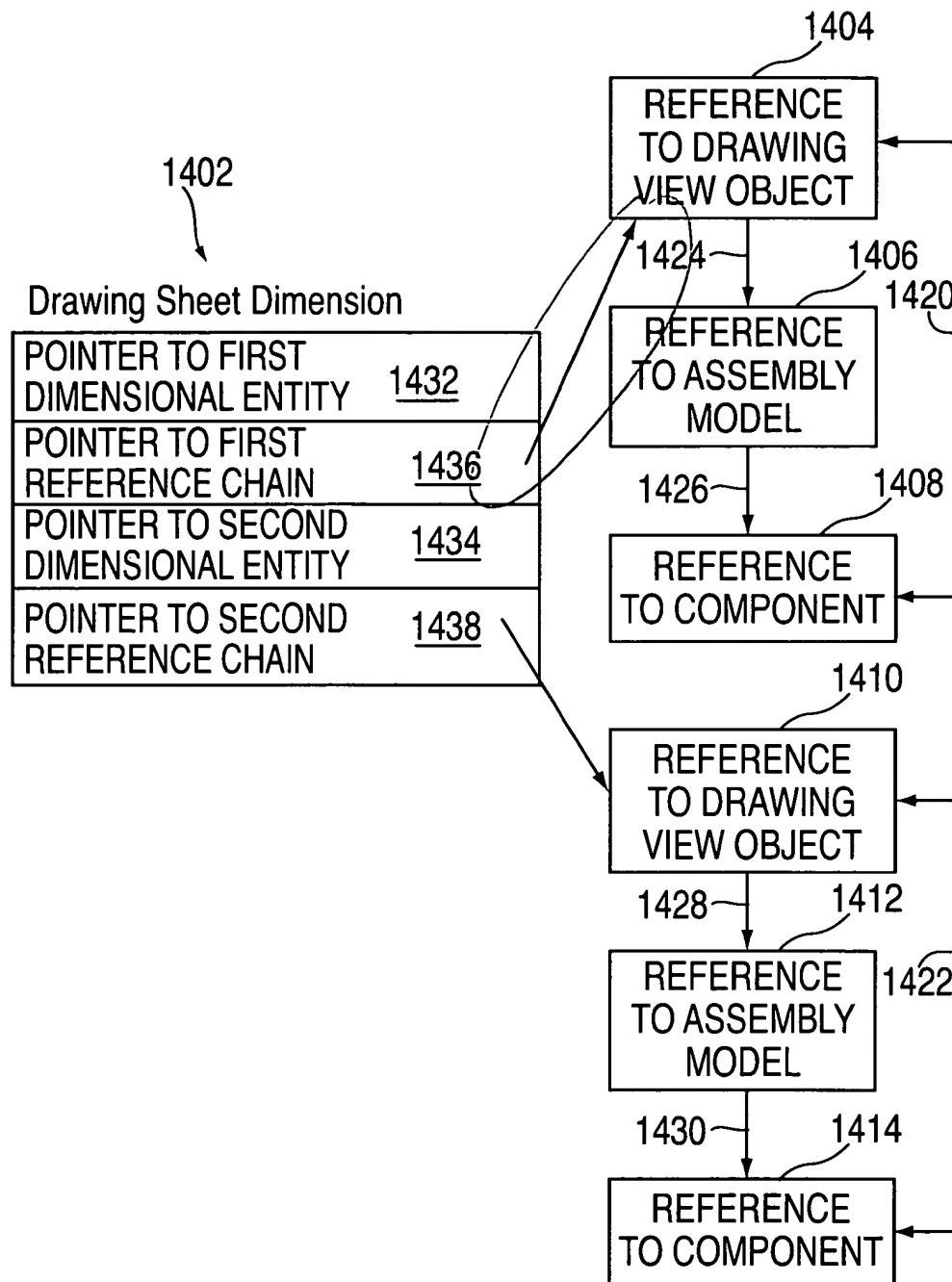


FIG. 14